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Ronald L. Hollis

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EXAMINER

NELSON, FREDA ANN

ART UNIT

PAPER NUMBER

3628

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/736,555

Applicant(s)

HOLLIS ET AL.

Examiner

Freda A. Nelson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2006 and 02 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-73 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-73 is/are rejected.
- 7) ☒ Claim(s) 1, 31, and 73 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The amendments received on November 27, 2006 and February 2, 2007 are acknowledged and entered. Claims 1, 7, 22-24, 31, 38, 40, 52, 60-61, 67-68, and 70-73 have been amended. No claims have been added. Claims 1-73 are currently pending.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on November 27, 2006 and February 2, 2007 have been entered.

Specification

1. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Objections

2. Claims 1, 31 and 73 are objected to because of the following informalities:
Claim 1, line 7, delete "of shape";
Claim 31, lines 4-5, delete "of shape"; and

Claim 73, line 8, delete "of shape".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 7, 22-24, 33, 38, 40, 54-55, and 60-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claims 3, 33, and 54, respectively, the examiner is unable to determine by the pricing formula how the price is determined without knowing the constants. The examiner believes the invention cannot operate as intended without undue experimentation.

As per claim 7, the examiner takes the position that the customer does not select one of a plurality of available manufacturing processes because the term "permitting" is indefinite and does not positively recite that the step is actually performed.

As per claim 22, the examiner takes the position that the customer does not select one of a plurality of available of surface finishes because the term "permitting" is indefinite and does not positively recite that the step is actually performed.

As per claim 23, the examiner takes the position that the customer does not purchase the custom manufactured part because the term "permitting" is indefinite and does not positively recite that the step is actually performed.

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As per claims 24 and 61, respectively, the examiner takes the position that the customer does not select a quantity of the part greater than one because the term "permitting" is indefinite and does not positively recite that the step is actually performed.

As per claim 38, the examiner takes the position that the customer is not allowed to select one or more features because the term "allowing" is indefinite and does not positively recite that the step is actually performed.

As per claim 40, the examiner takes the position that the customer is not allowed to select one of a plurality of manufacturing processes because the term "allows" is indefinite and does not positively recite that the step is actually performed.

As per claim 55, the examiner takes the position that the user does not select one of a plurality of available manufacturing processes because the term "permitting" is indefinite and does not positively recite that the step is actually performed.

As per claim 60, the examiner takes the position that the customer does not select one of a plurality of available surface finishes because the term "permitting" is indefinite and does not positively recite that the step is actually performed.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 71-73 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. See detailed discussion below.

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As the Supreme Court held, Congress chose the expansive language of 35 U.S.C. § 101 so as to include "anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09, 206 USPQ 193, 197 (1980). In *Chakrabarty*, 447 U.S. at 308-309, 206 USPQ at 197, the court stated:

In choosing such expansive terms as "manufacture" and "composition of matter," modified by the comprehensive "any," Congress plainly contemplated that the patent laws would be given wide scope. The relevant legislative history also supports a broad construction. The Patent Act of 1793, authored by Thomas Jefferson, defined statutory subject matter as "any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement [thereof]." Act of Feb. 21, 1793, ch. 11, § 1, 1 Stat. 318. The Act embodied Jefferson's philosophy that "ingenuity should receive a liberal encouragement." V Writings of Thomas Jefferson, at 75-76. See *Graham v. John Deere Co.*, 383 U.S. 1, 7-10 (148 USPQ 459, 462-464) (1966). Subsequent patent statutes in 1836, 1870, and 1874 employed this same road language. In 1952, when the patent laws were recodified, Congress replaced the word "art" with "process," but otherwise left Jefferson's language intact. The Committee Reports accompanying the 1952 Act inform us that Congress intended statutory subject matter to "include anything under the sun that is made by man." S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952). [Footnote omitted]

This perspective has been embraced by the Federal Circuit:

The plain and unambiguous meaning of section 101 is that any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if it meets the requirements for patentability set forth in Title 35, such as those found in sections 102, 103, and 112. The use of the expansive term "any" in section 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in section 101 and the other parts of Title 35.... Thus, it is improper to read into section 101 limitations as to the subject matter that may be patented where the legislative history does not indicate that Congress clearly intended such limitations.

Alappat, 33 F.3d at 1542, 31 USPQ2d at 1556.

35 U.S.C. § 101 defines four categories of inventions that Congress deemed to be the appropriate subject matter of a patent: processes, machines, manufactures and compositions of matter.

Federal courts have held that 35 U.S.C. § 101 does have certain limits. First, the phrase “anything under the sun that is made by man” is limited by the text of 35 U.S.C. § 101, meaning that one may only patent something that is a machine, manufacture, composition of matter or a process. See, e.g., *Alappat*, 33 F.3d at 1542, 31 USPQ2d at 1556; *In re Warmerdam*, 33 F.3d 1354, 1358, 31 USPQ2d 1754, 1757 (Fed. Cir. 1994). Second, 35 U.S.C. § 101 requires that the subject matter sought to be patented be a “useful” invention. Accordingly, a complete definition of the scope of 35 U.S.C. § 101, reflecting Congressional intent, is that any new and useful process, machine, manufacture or composition of matter under the sun that is made by man is the proper subject matter of a patent.

The subject matter courts have found to be outside of, or exceptions to, the four statutory categories of invention is limited to abstract ideas, laws of nature and natural phenomena. These three exclusions recognize that subject matter that is not a practical application or use of an idea, a law of nature or a natural phenomenon is not patentable. See, e.g., *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall.) 498, 507 (1874) (“idea of itself is not patentable, but a new device by which it may be made practically useful is”); *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 94, 40 USPQ 199, 202 (1939) (“While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of

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scientific truth may be.”); Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759 (“steps of ‘locating’ a medial axis, and ‘creating’ a bubble hierarchy . . . describe nothing more than the manipulation of basic mathematical constructs, the paradigmatic ‘abstract idea’”).

The courts have also held that a claim may not preempt ideas, laws of nature or natural phenomena. The concern over preemption was expressed as early as 1852. See *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1852) (“A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.”); *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 132, 76 USPQ 280, 282 (1948) (combination of six species of bacteria held to be nonstatutory subject matter). Accordingly, one may not patent every “substantial practical application” of an idea, law of nature or natural phenomena because such a patent “in practical effect be a patent on the [idea, law of nature or natural phenomena] itself.” *Gottschalk v. Benson*, 409 U.S. 63, 71-72, 175 USPQ 673, 676 (1972).

A claim that requires one or more acts to be performed defines a process. The applicant’s invention is directed to a method or a process and thus falls within an enumerated statutory class.

However, not all processes are statutory under 35 USC Section 101. To be statutory, a claimed process must either: (A) result in a physical transformation which a practical application is either disclosed in the specification or would have been known to

a skilled artisan, or (B) be limited to a practical application which produces a useful, tangible, and concrete result. See *Diehr*, 450 U.S. at 183-84, 209 USPQ at 6.

Upon making the determination that the invention is a method or process that falls within an enumerated statutory class, the Examiner must now determine whether the claimed invention falls within one of the Section 101 judicial exceptions, i.e., is the invention directed to laws of nature, natural phenomena or an abstract idea. Moreover, in evaluating whether the claims meet the requirements of section 101, the Supreme Court requires the Examiner to consider the claims as a whole to determine whether the invention is for a particular application of an abstract idea, rather than an abstract idea itself.

Exceptions: Laws of nature, natural Phenomena and Abstract Ideas:

Inventions directed to nothing more than abstract ideas (such as mathematical algorithms), natural phenomena, and laws of nature are not eligible and therefore are excluded from patent protection. *Diehr*, 450 U.S. at 185, 209 USPQ at 7; accord, e.g., *Chakrabarty*, 447 U.S. at 309, 206 USPQ at 197; *Parker v. Flook*, 437 U.S. 584, 589, 198 USPQ 193, 197 (1978); *Benson*, 409 U.S. at 67-68, 175 USPQ at 675; *Funk*, 333 U.S. at 130, 76 USPQ at 281. "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy*, 55 U.S. (14 How.) at 175. Instead, such "manifestations of laws of nature" are "part of the storehouse of knowledge," "free to all men and reserved exclusively to none." *Funk*, 333 U.S. at 130, 76 USPQ at 281.

Thus, "a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter" under Section 101. Chakrabarty, 447 U.S. at 309, 206 USPQ at 197. "Likewise, Einstein could not patent his celebrated law that $E=mc^2$; nor could Newton have patented the law of gravity." Ibid. Nor can one patent "a novel and useful mathematical formula," Flook, 437 U.S. at 585, 198 USPQ at 195; electromagnetism or steam power, O'Reilly v. Morse, 56 U.S. (15 How.) 62, 113-114 (1853); or "[t]he qualities of * * * bacteria, * * * the heat of the sun, electricity, or the qualities of metals," Funk, 333 U.S. at 130, 76 USPQ at 281; see Le Roy, 55 U.S. (14 How.) at 175.

While abstract ideas, natural phenomena, and laws of nature are not eligible for patenting, methods and products employing abstract ideas, natural phenomena, and laws of nature to perform a real-world function may well be. In evaluating whether a claim meets the requirements of section 101, the claim must be considered as a whole to determine whether it is for a particular application of an abstract idea, natural phenomenon, or law of nature, rather than for the abstract idea, natural phenomenon, or law of nature itself.

Determine Whether the Claimed Invention Covers Either a § 101 Judicial Exception or a Practical Application of a § 101 Judicial Exception

The Examiner must ascertain the scope of the claim to determine whether it covers either a § 101 judicial exception or a practical application of a § 101 judicial exception. The conclusion that a particular claim includes a § 101 judicial exception does not end the inquiry because "[i]t is now commonplace that an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent

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protection.” Diehr, 450 U.S. at 187, 209 USPQ at 8 (emphasis in original); accord Flook, 437 U.S. at 590, 198 USPQ at 197; Benson, 409 U.S. at 67, 175 USPQ at 675. Thus, “[w]hile a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.” Diehr, 450 U.S. at 188, 209 USPQ at 8-9 (quoting Mackay, 306 U.S. at 94); see also Corning v. Burden, 56 U.S. (15 How.) 252, 268, 14 L.Ed. 683 (1854)(“It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted . . .”).

In light of the rejection under 35 USC Section 112, second paragraph, and in light of the specification, it appears that the applicant is directing the invention to a method for providing a firm price quotation for a custom manufactured part. Assuming this is correct, the Examiner asserts that the applicant’s invention is directed to an abstract idea. The Examiner now must determine if the applicant’s invention is a particular application of an abstract idea.

**Determine Whether the Claimed Invention is a Practical Application of an
Abstract Idea, Law of Nature, or Natural Phenomenon (§ 101 Judicial
Exceptions)**

For claims including such excluded subject matter to be eligible, the claim must be for a practical application of the abstract idea, law of nature, or natural phenomenon. Diehr, 450 U.S. at 187, 209 USPQ at 8 (“application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”);

Benson, 409 U.S. at 71, 175 USPQ at 676 (rejecting formula claim because it “has no substantial practical application”).

To satisfy section 101 requirements, the claim must be for a practical application of the § 101 judicial exception, which can be identified in various ways:

- (a). The claimed invention “transforms” an article or physical object to a different state or thing.
- (b) The claimed invention otherwise produces a useful, concrete and tangible result, based on the factors discussed below.

a. Practical Application by Physical Transformation

The applicant’s invention does not transform an article or physical object to a different state or thing. Transferring goods allows the goods to remain in the same state, albeit allowing them to change physical locations.

b. Practical Application That Produces a Useful, Concrete, and Tangible Result

For eligibility analysis, physical transformation “is not an invariable requirement, but merely one example of how a mathematical algorithm [or law of nature] may bring about a useful application.” AT&T, 172 F.3d at 1358-59, 50 USPQ2d at 1452. Since the Examiner determined that the claims do not entail the transformation of an article, the Examiner must review the claim to determine if the claim provides a practical application that produces a useful, tangible and concrete result. In determining whether the claim is for a “practical application,” the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result

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achieved by the claimed invention is "useful, tangible and concrete." The claim must be examined to see if it includes anything more than a § 101 judicial exception. If the claim is directed to a practical application of the § 101 judicial exception producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. § 101. If the examiner does not find such a practical application, the examiner has determined that the claim is nonstatutory. In determining whether a claim provides a practical application that produces a useful, tangible, and concrete result, the examiner considers and weighs the following factors:

"USEFUL RESULT"

For an invention to be "useful" it must satisfy the utility requirement of section 101. The USPTO's official interpretation of the utility requirement provides that the utility of an invention has to be (i) specific, (ii) substantial and (iii) credible. MPEP § 2107 and Fisher, 421 F.3d at ___, 76 USPQ2d at 1230 (citing the Utility Guidelines with approval for interpretation of "specific" and "substantial").

The Examiner asserts that the applicant's invention has a specific, substantial and credible result and thus produces a useful result.

"TANGIBLE RESULT"

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the

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claim must recite more than a § 101 judicial exception, in that the process claim must set forth a practical application of that § 101 judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had “no substantial practical application.”). “[A]n application of a law of nature or mathematical formula to a ... process may well be deserving of patent protection.” Diehr, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also Corning, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 (“It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted . . .”). In other words, the opposite meaning of “tangible” is “abstract.”

The Examiner asserts that the method claim does not produce a real-world result, or beneficial effect and thus has no substantial application. The invention as claimed is either directed to a transfer goods, which does not result in a physical transformation or reduction of the goods to a different state or thing, or the invention identifies an abstract idea.

“CONCRETE RESULT”

Another consideration is whether the invention produces a “concrete” result. Usually, this question arises when a result cannot be assured. In other words, the process must have a result that can be substantially repeatable or the process must substantially produce the same result again. In re Swartz, 232 F.3d 862, 864, 56 USPQ2d 1703, 1704 (Fed. Cir. 2000) (where asserted result produced by the claimed invention is “irreproducible” claim should be rejected under section 101). The opposite

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of "concrete" is unrepeatable or unpredictable. Resolving this question is dependent on the level of skill in the art.

The Examiner asserts that the applicant's invention is repeatable or predictable.

Determine Whether the Claimed Invention Preempts an Abstract Idea, Law of Nature, or Natural Phenomenon (§ 101 Judicial Exceptions)

Even when a claim applies a mathematical formula, for example, as part of a seemingly patentable process, the examiner must ensure that it does not in reality "seek[] patent protection for that formula in the abstract." Diehr, 450 U.S. at 191, 209 USPQ at 10. "Phenomena of nature, though just discovered, mental processes, abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." Benson, 409 U.S. at 67, 175 USPQ at 675. One may not patent a process that comprises every "substantial practical application" of an abstract idea, because such a patent "in practical effect would be a patent on the [abstract idea] itself." Benson, 409 U.S. at 71-72, 175 USPQ at 676; cf. Diehr, 450 U.S. at 187, 209 USPQ at 8 (stressing that the patent applicants in that case did "not seek to pre-empt the use of [an] equation," but instead sought only to "foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process"). "To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection." Diehr, 450 U.S. at 192, 209 USPQ at 10. Thus, a claim that recites a computer that solely calculates a mathematical formula (see Benson) or a computer disk that solely stores a mathematical formula is not directed to the type of subject matter eligible for patent protection.

The applicant's invention is effectively directed to an abstract concept.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 21, 23, 31, 46, 52, 59, 67-68 and 70-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al. (Patent Number 5,570,292), in view of Applicant's Admitted Prior Art (hereinafter referred to as AAPA), in further view of Thompson et al. (US Patent Number 6,810,401).

As per claims 1, 23, 52, 67-73 Abraham et al. disclose a method of providing a firm price quotation for a custom manufactured part, comprising:

(a) receiving access on a server computer system from a customer computer over a global communication network (abstract; col. 4, lines 29-40; col. 8, lines 4-18; FIGS 1 and 7);

(c) analyzing the pre-existing CAD file on the server computer system to determine one or more manufacturing criteria for the custom manufactured part (col. 4, lines 13-17; col. 10, lines 12-16);

(d) calculating in the server computer system a firm price quotation for the custom manufactured part based upon the one or more manufacturing criteria (abstract; col. 4, lines 35-37; and FIG. 8); and

(e) transmitting the price quotation to the customer computer over the global communication network (col. 8, lines 13-19; FIG. 8).

Abraham et al. do not expressly disclose (b) uploading from the customer computer to the server computer system the pre-existing CAD file describing a three-dimensional custom manufactured part originated by a customer. However, AAPA discloses that these additive manufacturing techniques involve the use of computer controlled manufacturing processes which can manufacture a three dimensional part from a CAD file describing the part (page 2, lines 12-14); and the designer can use a pre-existing CAD file or may wish to create one expressly for prototyping purposes (page 5, lines 5-7).

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Thompson et al. disclose a user (e.g., consumer, sales-representative, buyer, seller, contractor, builder, architect, consultant, organizer, project coordinator, etc.) of the configuration system interacts with the system to configure and/or estimate the cost of a desired product, component, or project (col.3, lines 34-39). Thompson et al. further disclose that the invention can also include an Import/Export function set which permits a project to be built on one computer and exported into a file format, which can be imported into the same application on another computer (provided the product knowledge sets are exactly the same) and this function set allows a project to be constructed by a customer and then imported by a dealer, distributor or sales representative for quote generation, final order pricing adjustment and negotiation. Similarly, projects can be shared between dealers, sales-people and customer service personnel (col. 14, lines 34-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention have of Abraham et al. to include the features of AAPA and Thompson et al. in order to provide the customer /user the ability to use a pre-existing CAD file or create one.

As per claims 21 and 59, Abraham et al. disclose prior to step (e), selecting one of a plurality of available materials; and wherein step (d) includes calculating the price quotation for the selected material (col. 8, lines 23-35).

As per claim 31, Abraham et al. disclose a program stored in a computer readable media for generating binding price quotations for custom manufactured parts comprising:

- a CAD file analysis program portion for receiving a pre-existing CAD file describing one or more three-dimensional custom manufactured part originated by a customer, said pre-existing CAD file being constructed independently of the program, and for analyzing the CAD file to determine one or more manufacturing criteria corresponding to each three-dimensional custom manufactured part; and

- a price generation program portion for generating a binding price quotation based upon the one or more manufacturing criteria when executed by a processor (col. 8, lines 4-22).

Abraham et al. do not expressly disclose a CAD file analysis program portion for receiving a pre-existing CAD file describing one or more three-dimensional custom manufactured parts of arbitrary shape, said pre-existing CAD file being constructed independently of the program, and for analyzing the CAD file to determine one or more manufacturing criteria corresponding to each three-dimensional custom manufactured part of arbitrary shape.

However, AAPA discloses that these additive manufacturing techniques involve the use of computer controlled manufacturing processes which can manufacture a three dimensional part from a CAD file describing the part (page 2, lines 12-14); and the designer can use a pre-existing CAD file or may wish to create one expressly for prototyping purposes (page 5, lines 5-7).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the features of AAPA in order to construct a full scale three dimensional prototype of the part (AAPA, page 1).

As per claim 46, Abraham et al. disclose the program of claim 31, further comprising: an order generation program portion for assembling all electronic files corresponding to a price quotation into a single directory for transmission to a supplier responsible for the quotation (col. 4, lines 29-42).

As per claim 69, Abraham et al. disclose the method of claim 52, wherein: the computer system includes one and only one computer (see 30 of FIG.7).

6. Claims 2-6, 33-37, and 53-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al., in view of Applicant's Admitted Prior Art (hereinafter referred to as AAPA), in further view of Thompson et al. (US Patent Number 6,810,401), still in further view of Tadao et al. (JP 09160945).

As per claims 2 and 53, Abraham et al. does not disclose the method as recited in claim 1, wherein step (e) is performed substantially instantly with a pre-programmed pricing formula.

Tadao et al. disclose that each cost element is calculated using a formula determined beforehand (paragraph 0020).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the feature of Tadao et al. in order to calculate cost by using predetermined casting algorithms/formulae.

As per claims 3-6 and 54-58, Abraham et al. does not disclose the method as recited in claim 2, wherein the pricing formula is in the form:

$$\text{price} = a * V + b * H + c;$$

where a, b and c are preprogrammed constants, where V is the volume of the part, and where H is a vertical dimension of the part in a selected orientation; wherein

the selected orientation of the part is selected to minimize H and thus minimize the calculated price; wherein, the pricing formula includes a finish charge dependent upon a selected finish and a surface area of the part; and wherein the pricing formula includes a multiple part charge dependent upon a quantity of parts quoted. Uchida et al. does not expressly disclose the method wherein the wherein the pricing formula is in the form:

$$\text{price} = a * V + b * H + c .$$

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However, Tadao et al. disclose that when computing the cost of materials, multiply the volume of a product by a specific gravity, apply the sprue/runner weight obtained and it considers as AUW.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to formulate and utilize any formula to calculate the manufacturing cost because applicant has not disclosed that the applicant's formula provides an advantage. One of ordinary skill in the art, furthermore, would have expected applicant's invention to perform equally well with the Abraham et al. and Tadao et al. because both can output the costs calculated by the various estimating means.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention Abraham et al. to include the pricing formula: $\text{price} = a * V + b * H + c$, in order to generate the price quotation for the product.

As per claims 33-37, Abraham et al. does not disclose the program, wherein: the price generation program portion includes a pricing formula in the form:
 $\text{price} = a * V + b * H + c$;
where a, b and c are preprogrammed constants;
where V is the volume of each part;
where H is a vertical dimension of each part in a selected orientation;
wherein: the constants a, b and c correspond to a specific business operations facility and are determined by a statistical regression of multiple data points of price data for the specific business operations facility onto the pricing formula;
wherein: the selected orientation of the part is selected such that H is minimized and the generated price quotation thus minimized;
wherein: the one or more manufacturing criteria determined by the CAD file analysis program portion include a surface area for each part; and
the pricing formula includes a finish charge dependent upon a selected finish and the surface area of the parts; and
wherein: the pricing formula includes a multiple part charge dependent upon the quantity of parts quoted.

However, Tadao et al. disclose that when computing the cost of materials, multiply the volume of a product by a specific gravity, apply the sprue/runner weight obtained and it considers as AUW. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to formulate and utilize any formula to calculate the manufacturing cost because applicant has not disclosed that the applicant's formula provides an advantage. One of ordinary skill in the art, furthermore, would have expected applicant's invention to perform equally well with the Abraham et al. and Tadao et al. because both can output the costs calculated by the various estimating means.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention Abraham et al. to include the

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pricing formula: $\text{price} = a * V + b * H + c$, in order to generate the price quotation for the product.

7. Claims 7-12, 14-15, and 38-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al., in view of Applicant's Admitted Prior Art (hereinafter referred to as AAPA), in further view of Thompson et al. (US Patent Number 6,810,401), still in further view of Tadao et al., still in further view of Hazama et al. (Patent Number 6,539,399).

As per claims 7 and 38-40, Abraham et al. do not disclose the method further comprising: prior to step (d), permitting the customer to select one of a plurality of available manufacturing processes; and wherein step (d) includes calculating the price quotation for the selected manufacturing process.

However, Hazama et al. disclose that the user can select a manufacturing process, such as bending or laser cutting (col. 4, lines 27-29); and the user develops an overall manufacturing plan that may include multiple manufacturing processes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the feature of Hazama et al. in order to allow the customer to customize the parts by choosing the features.

As per claim 8, Abraham et al. do not disclose the method of claim 7, wherein: the manufacturing processes is an additive manufacturing process, however this difference is only found in the nonfunctional descriptive material and are not functionally involved in the steps recited. The method of providing a firm price quotation for a custom manufactured part would be performed the same regardless of the data. Thus, descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a firm price quotation for a custom manufactured part because type of manufacturing process does not functionally relate to the steps in the method claimed and because the subjective interpretation of the data does not patentably distinguish the claimed invention.

As per claims 9 and 41, Abraham et al. do not disclose the method wherein: the additive manufacturing process is a stereo lithography process, however these differences are only found in the nonfunctional descriptive material and are not functionally involved in the steps recited. The method of providing a firm price quotation

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for a custom manufactured part would be performed the same regardless of the data. Thus, descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a firm price quotation for a custom manufactured part because type of manufacturing process does not functionally relate to the steps in the method claimed and because the subjective interpretation of the data does not patentably distinguish the claimed invention.

As per claim 10, Abraham et al. do not disclose the method of claim 8, wherein: the additive manufacturing process is a selective sintering laser process, however these differences are only found in the nonfunctional descriptive material and are not functionally involved in the steps recited. The method of providing a firm price quotation for a custom manufactured part would be performed the same regardless of the data. Thus, descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a firm price quotation for a custom manufactured part because type of manufacturing process does not functionally relate to the steps in the method claimed and because the subjective interpretation of the data does not patentably distinguish the claimed invention.

As per claim 11, Abraham et al. do not disclose the method of claim 8, wherein: the additive manufacturing process is a fused deposition modeling process, however these differences are only found in the nonfunctional descriptive material and are not functionally involved in the steps recited. The method of providing a firm price quotation for a custom manufactured part would be performed the same regardless of the data. Thus, descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a firm price quotation for a custom manufactured part because type of manufacturing process does not functionally relate to the steps in the method claimed and because the subjective interpretation of the data does not patentably distinguish the claimed invention.

As per claim 12, Abraham et al. do not disclose the method of claim 7, wherein: the manufacturing process is a formative manufacturing process, however these differences are only found in the nonfunctional descriptive material and are not functionally involved in the steps recited. The method of providing a firm price quotation for a custom manufactured part would be performed the same regardless of the data. Thus, descriptive material will not distinguish the claimed invention from the prior art in

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terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a firm price quotation for a custom manufactured part because type of manufacturing process does not functionally relate to the steps in the method claimed and because the subjective interpretation of the data does not patentably distinguish the claimed invention.

As per claim 14, Abraham et al. do not disclose the method of claim 7, wherein: the manufacturing process includes the molding of parts from soft rubber tooling created using a pattern manufactured by an additive manufacturing process; and

step (e) is performed with a pre-programmed pricing formula which includes a pattern part pricing formula, a tooling pricing formula, and a molded part pricing formula, however these differences are only found in the nonfunctional descriptive material and are not functionally involved in the steps recited. The method of providing a firm price quotation for a custom manufactured part would be performed the same regardless of the data. Thus, descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a firm price quotation for a custom manufactured part because type of manufacturing process does not functionally relate to the steps in the method claimed and because the subjective interpretation of the data does not patentably distinguish the claimed invention.

As per claim 15, Abraham et al. do not disclose the method of claim 7, wherein: the manufacturing process includes injection molding of the parts from thermoplastic material using molds; and step (e) is performed with a pre-programmed pricing formula which includes a tooling pricing formula and a molded part pricing formula, however these differences are only found in the nonfunctional descriptive material and are not functionally involved in the steps recited. The method of providing a firm price quotation for a custom manufactured part would be performed the same regardless of the data. Thus, descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a firm price quotation for a custom manufactured part because type of manufacturing process does not functionally relate to the steps in the method claimed and because the subjective interpretation of the data does not patentably distinguish the claimed invention.

As per claim 42, Abraham et al. does not disclose the method of claim 40, wherein: the plurality of manufacturing processes include: at least one additive manufacturing process; and at least one formative manufacturing process, however

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these differences are only found in the nonfunctional descriptive material and are not functionally involved in the steps recited. The method of providing a firm price quotation for a custom manufactured part would be performed the same regardless of the data. Thus, descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a firm price quotation for a custom manufactured part because type of manufacturing process does not functionally relate to the steps in the method claimed and because the subjective interpretation of the data does not patentably distinguish the claimed invention.

8. Claims 13, 16-20, 24, 29-30, 43-45, 61 and 65-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al. (Patent Number 5,570,292), in view of Applicant's Admitted Prior Art (hereinafter referred to as AAPA), in further view of Thompson et al. (US Patent Number 6,810,401), still in further view of Tadao et al., still in further view of Hazama et al., still in further view of Protomold.com.

As per claims 13, 16-20, and 43, Abraham et al. does not disclose the method, wherein the one or more manufacturing criteria includes volume of the part; in step (c), the one or more manufacturing criteria include the geometric extent of the part along multiple axes; and wherein in step (d), the one or more manufacturing criteria includes surface area of the part.

However, Protomold.com discloses that there are a number of requirements on part size, geometry, and surface finish for a part to be compatible with the Protomold process.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the feature of Protomold.com in order provide the user with requirements or guidelines to be certain the parts are compatible to the process used.

As per claims 29-30, 44-45, and 65-66, Abraham et al. does not disclose the method, wherein the one or more manufacturing criteria further includes identification of three-dimensional geometric features relevant to a difficulty of the manufacturing process; and wherein the three-dimensional geometric features include at least one feature selected from the group consisting of parting lines, undercuts, pockets, protrusions, wall thickness, surface features and solid features.

However, Protomold.com discloses guidelines for thin/ deep ribs, corner radius, undercuts, draft, and shutoffs (page 15). Therefore, it would have been obvious to one

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of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the feature of Protomold.com in order provide the user with requirements or guidelines to be certain the parts are compatible to the process used.

As per claim 24, Abraham et al. does not disclose the method comprising: prior to step (d), permitting a customer to select a quantity of the part greater than one; and wherein step (d) includes calculating the price quotation for the selected quantity, wherein the quantity price per unit is less than the price for a single unit.

Protomold.com discloses permitting the client to select a quantity of the part greater than one (page 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the feature of Protomold.com to permit the customer the option of ordering more than one part.

As per claim 61, Abraham et al. does not disclose the method comprising: prior to step (c), permitting a customer to select a quantity of the part greater than one; and wherein step (c) includes calculating the price quotation for the selected quantity, wherein the quantity price per unit is less than the price for a single unit.

Protomold.com discloses permitting the client to select a quantity of the part greater than one (page 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the feature of Protomold.com to permit the customer the option of ordering more than one part.

9. Claim 22 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al. (Patent Number 5,570,292), in view of Applicant's Admitted Prior Art (hereinafter referred to as AAPA), in further view of Thompson et al. (US Patent Number 6,810,401), still in further view of Protomold.com, still in further view of Partsnow.com.

As per claim 22, Abraham et al. does not disclose prior to step (d), permitting the customer to select one of a plurality of available surface finishes; wherein in step (c), the one or more manufacturing criteria includes surface area of the part; and wherein in step (d), the price quotation is dependent upon the selected surface finish and the surface area.

However, Protomold.com discloses providing a polished finish (page 15), maximum projected area as viewed through the axis along which the mold moves is 30 sq. in. (page 15); a maximum volume part (page 15); and parts cost is typically \$0.50-\$2.00 per part + \$500 setup charge per order.

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Partsnow.com discloses that Soligen typically provides hand finishing.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the feature of Protomold.com and Partnow.com in order provide the user with costs for finishes, materials and processes.

As per claim 60, Abraham et al. does not disclose prior to step (c), permitting the customer to select one of a plurality of available surface finishes; wherein in step (b), the one or more manufacturing criteria includes surface area of the part; and wherein in step (c), the price quotation is dependent upon the selected surface finish and the surface area.

However, Protomold.com discloses providing a polished finish (page 15), maximum projected area as viewed through the axis along which the mold moves is 30 sq. in. (page 15); a maximum volume part (page 15); and parts cost is typically \$0.50-\$2.00 per part + \$500 setup charge per order.

Partsnow.com discloses that Soligen typically provides hand finishing.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the feature of Protomold.com and Partnow.com in order provide the user with costs for finishes, materials and processes.

10. Claims 25-26, 28, 47-51, and 62-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al. (Patent Number 5,570,292), in view of Applicant's Admitted Prior Art (hereinafter referred to as AAPA), in further view of Thompson et al. (US Patent Number 6,810,401), still in further view of Takeshi et al. (JP 09114873).

As per claims 25 and 62, Abraham et al. do not disclose a method for providing a firm price quotation for a buildset including a plurality of custom manufactured parts, comprising:

- determining a platform area required by each part of the buildset and determining a total platform area required by the buildset;

- comparing the total platform area required by the buildset to an available platform area of a manufacturing machine to determine whether the entire buildset will fit on the platform;

- if the entire buildset will not fit on the platform, dividing the buildset into a plurality of subsets small enough for each subset to fit on the platform; wherein step (e) further includes calculating a firm price quotation for each subset, and summing the subset price quotations to provide a firm price quotation for the entire buildset.

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However, Takeshi et al. discloses, for a volume calculation apparatus for 3D components defined using CAD, that the apparatus includes a buildset grouping program for grouping a plurality of parts making up a buildset into a plurality of subsets of parts, each subset being of a size that will fit upon an available platform area of a selected machine (abstract and FIGS. 6-7, 10, 12, 14, and 16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention Abraham et al. to include the feature of Takeshi et al. for the purpose of generating a pricing for the entire buildset.

As per claims 26 and 63, Abraham et al. do not disclose the method, wherein the dividing step includes: ordering the parts from largest to least required platform area; and selecting the largest parts sequentially to make-up the subsets. Takeshi et al. discloses, for a volume calculation apparatus for 3D components defined using CAD, that the apparatus includes a buildset grouping program for grouping a plurality of parts making up a buildset into a plurality of subsets of parts, each subset being of a size that will fit upon an available platform area of a selected machine (abstract and FIGS. 6-7, 10, 12, 14, and 16). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention Abraham et al. to include the feature of Takeshi et al. for the purpose of determining the platform area and volume required by each part at high speed with high precision entire buildset.

As per claims 28, 51, and 64, Abraham et al. do not disclose the method, being further characterized as a method for providing a firm price quotation for a buildset including a plurality of custom manufactured parts, wherein: step (d) includes: determining X, and Z components for a rectangular box space enclosing each part; and optimizing an arrangement of the parts of the buildset within an available volume of a selected manufacturing machine to minimize an overall height of the buildset within the manufacturing machine, the overall height of the buildset being one of the one or more manufacturing criteria; and step (e) includes calculating a firm price quotation for the entire buildset based at least in part upon the overall height of the buildset.

However, Takeshi et al. discloses, for a volume calculation apparatus for 3D components defined using CAD, that the apparatus includes a buildset grouping program for grouping a plurality of parts making up a buildset into a plurality of subsets of parts, each subset being of a size that will fit upon an available platform area of a selected machine (abstract and FIGS. 6-7, 10, 12, 14, and 16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention Abraham et al. to include the feature of Takeshi et al. for the purpose of determining the platform area and volume required by each part at high speed with high precision.

As per claim 47, Abraham et al. do not disclose the program of claim 31, further comprising: a buildset grouping program portion for grouping a plurality of parts making up a buildset into a plurality of subsets of parts, each subset being of a size that will fit upon an available platform area of a selected manufacturing machine.

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However, Takeshi et al. discloses, for a volume calculation apparatus for 3D components defined using CAD, that the apparatus includes a buildset grouping program for grouping a plurality of parts making up a buildset into a plurality of subsets of parts, each subset being of a size that will fit upon an available platform area of a selected machine (abstract and FIGS. 6-7, 10, 12, 14, and 16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention Abraham et al. to include the feature of Takeshi et al. for the purpose of determining the platform area and volume required by each part at high speed with high precision.

As per claim 48, Abraham et al. do not disclose the program of claim 47, wherein:

the price generation program portion calculates a price quotation for each subset, and sums the subset price quotations to generate a binding price quotation for the entire buildset.

However, Takeshi et al. discloses, for a volume calculation apparatus for 3D components defined using CAD, that the apparatus includes a buildset grouping program for grouping a plurality of parts making up a buildset into a plurality of subsets of parts, each subset being of a size that will fit upon an available platform area of a selected machine (abstract and FIGS. 6-7, 10, 12, 14, and 16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention Abraham et al. to include the feature of Takeshi et al. for the purpose of determining the platform area and volume required by each part at high speed with high precision.

As per claim 49, Abraham et al. do not disclose the program of claim 47, wherein: the buildset grouping program portion determines a platform area required by each part orders the parts from largest to least required platform area, and selects the largest parts sequentially to make-up the subsets.

However, Takeshi et al. discloses, for a volume calculation apparatus for 3D components defined using CAD, that the apparatus includes a buildset grouping program for grouping a plurality of parts making up a buildset into a plurality of subsets of parts, each subset being of a size that will fit upon an available platform area of a selected machine (abstract and FIGS. 6-7, 10, 12, 14, and 16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention Abraham et al. to include the feature of Takeshi et al. for the purpose of determining the platform area and volume required by each part at high speed with high precision.

As per claim 50, Abraham et al. do not disclose the program of claim 31, further comprising: a buildset grouping program portion for grouping a plurality of parts making up the buildset into a plurality of subsets of parts, each subset being of a size that will fit into an available volume of a selected manufacturing machine.

However, Takeshi et al. discloses, for a volume calculation apparatus for 3D components defined using CAD, that the apparatus includes a buildset grouping

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program for grouping a plurality of parts making up a buildset into a plurality of subsets of parts, each subset being of a size that will fit upon an available platform area of a selected machine (abstract and FIGS. 6-7, 10, 12, 14, and 16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention Abraham et al. to include the feature of Takeshi et al. for the purpose of determining the platform area and volume required by each part at high speed with high precision.

11. Claims 27 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al. (Patent Number 5,570,292), in view of Applicant's Admitted Prior Art (hereinafter referred to as AAPA), in further view of Thompson et al. (US Patent Number 6,810,401), still in further view of Partsnow.com.

As per claims 27 and 32, Abraham et al. does not disclose the method, wherein in step (c) the CAD file is an STL file.

However, Partsnow.com disclose that Soligen's preference in file formats are as follows: Binary STL file and ASCII STL file (page 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Abraham et al. to include the feature of Partsnow.com in order permit the user to send CAD files with various formats.

Conclusion

12. The examiner has cited prior art of interest, for example:

1) Bigelow (US Patent Number 5,647,305), which disclose a product design system and method.

2) Puri (US Patent Number 6,064,982), which disclose a smart configurator.

3) Tanaka et al. (US Patent Number 6,343,285), which disclose an estimation and designing supporting apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freda A. Nelson whose telephone number is (571) 272-7076. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hayes can be reached on 571-272-6708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

FAN 2/16/2007


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